

Tanning Bed Perception Survey

A Questionnaire-based Study

^aJERRY BREWER, MD; ^bDONNA MCQUINN, BSN, RN; ^bCHRISTINE LOHSE, MS; ^cJOHN HASSANI, DO, MA

^aMayo Clinic, Department of Dermatology, Rochester Minnesota; ^bMayo Clinic, Department of Health Sciences Research, Rochester, Minnesota;

^cNew York Institute of Technology, College of Osteopathic Medicine, Old Westbury, New York

ABSTRACT

Objective: This study was intended to investigate the perception of tanning bed use among college students. **Design:** A 15-question survey was given to young adults regarding tanning perceptions. **Setting:** Rochester Community College in Rochester, Minnesota. **Participants:** Forty-four respondents between 18 and 51 years of age. **Measurements:** Data was collected via a self-reported questionnaire. **Results:** In this study, 50 percent of participants were not educated on the risks of melanoma, and 68 percent were not interested in receiving information on melanoma and completing a follow-up survey. More specifically, 63 percent versus 89 percent of participants with no tanning bed versus some tanning bed use did not want information regarding melanoma, respectively. This study also shows that more tanning bed users believe tanning helps prevent burning than non-tanning bed users. Fifty-seven percent of the 35 participants who had never used a tanning bed thought that they never prevent sunburn, while only 11 percent of the nine participants who had used a tanning bed in the past thought that they never prevent sunburn, which was statistically significant. (*J Clin Aesthet Dermatol.* 2015;8(3):23–27.)

Nearly 30 million people tan indoors in the United States every year.¹ It is notably significant in younger patients. In a study of more than 10,000 boys and girls aged 12 to 18,² tanning bed use increased from seven percent among 14-year-old girls to 16 percent by age 15, and more than doubled again by age 17. Tanning bed users' reasons for use can include the following: "to look better," "to feel healthy," "tanning is accomplished in less time," "salons have a pleasant atmosphere," "burning is avoided." Words associated with tanning salons include "relaxation," "easy," "nice," "friendly."³ Tanning bed use among girls reporting that it was worth getting burned was nearly double than for those without this belief (22.3% vs. 11.3%).²

There are significant dangers associated with artificial tanning use. Karagas et al⁴ reported that any use of tanning devices was associated with an odds ratio of 2.5 for squamous cell carcinoma and a 1.5 higher odds ratio for basal cell carcinoma. Indoor ultraviolet tanners are also 74 percent more likely to develop melanoma than are those who have never tanned indoors.⁵ There is a ban on tanning bed use in people under the age of 18 in many countries and seven American states.⁶ Brazil banned tanning beds altogether in 2009,⁷ and Australia has banned tanning beds in most areas with plans to end all commercial tanning by

the end of 2015.⁶

Knowledge about tanning bed safety needs to be improved. On YouTube, there are more advertisements for tanning salons than total number of videos purveying the dangers of tanning.⁸ Providing patients with tanning bed safety information may alter tanning bed usage. Robinson et al² reported on 100 young adults and found that knowledge of melanoma/skin cancer was associated with a change in tanning bed usage from 1988 (42%) to 1994 (38%) to 2007 (87%). Knowledge of the association of tanning and melanoma increased from 1988 (25%) to 1994 (77%), but decreased from 1994 to 2007 (67%). Although physicians, especially dermatologists, were sources of information about tanning and were considered the most trusted source, only 14 percent of respondents in 1994 and 2007 reported ever talking to a doctor about indoor tanning. Physicians should be conscious of actively counseling patients about the safety of tanning bed use. Hession et al⁹ reported that among 137 pediatricians who responded through an online survey in New York State, 45 percent counseled at least one percent of their patients between the ages of 11 and 18 years on indoor tanning, while only four percent counsel 50 percent or more, despite the fact that 92 percent agreed that indoor tanning

DISCLOSURE: The authors report no relevant conflicts of interest.

ADDRESS CORRESPONDENCE TO: Dr. Jerry D. Brewer, MD, Assistant Professor of Dermatology, Division of Dermatologic Surgery, Department of Dermatology, Mayo Clinic, 200 First Street SW, Rochester, MN 55905. E-mail address: brewer.jerry@mayo.edu

TABLE 1. Demographics of survey responders (44 participants)

FEATURE	N (%)
Q1—Are you currently receiving phototherapy (PUVA, UVB) from a health care professional?	
Yes	0 (0)
No	43 (0.98)
Don't know	1 (0.2)
Q2—Age (in years)	
18–25	30 (68)
26–32	6 (14)
33–39	3 (7)
40+	5 (11)
Q3—Gender	
Male	17 (39)
Female	27 (61)
Q4—Do you believe that tanning beds are harmful?	
Never	2 (5)
Rarely	2 (5)
Sometimes	7 (16)
Most of the time	8 (18)
Always	25 (57)
Q5—Do you think that tanning beds cause melanoma?	
Never	1 (2)
Rarely	4 (9)
Sometimes	17 (39)
Most of the time	13 (30)
Always	9 (20)
Q6—Do you believe that tanning beds help to prevent sunburn?	
Never	21 (48)
Rarely	9 (20)
Sometimes	12 (27)
Most of the time	2 (5)
Always	0
Q7—During the past 12 months, how often did you use an indoor tanning device such as a sun lamp, sunbed, or tanning booth? (Do not count getting a spray on tan.)	
Never	35 (80)
Less than monthly	5 (11)
Monthly	3 (7)
Weekly	1 (2)
Daily	0

TABLE 1 continued. Demographics of survey responders (44 participants)

FEATURE	N (%)
Q8—The last time that you used a tanning device was:	
One week ago	2 (5)
One month ago	3 (7)
6 months ago	4 (9)
One year ago	7 (16)
Over 5 years ago	4 (9)
Never	24 (55)
Q9—Have you ever received education on melanoma?	
Yes	22 (50)
No	22 (50)
Q10—Have you ever received education/information on the risks of sunburn and skin cancer related to using tanning devices?	
Yes	28 (64)
No	16 (36)
Q11—Have you ever had a skin biopsy or a mole removed in the past?	
Yes	8 (18)
No	36 (82)
Q12 (N=43)—Do you have a family member (mother, father, brother, sister, son, or daughter) that has been diagnosed with melanoma in the past?	
Yes	8 (19)
No	35 (81)
Q13—Have you ever seen a dermatologist for a skin exam?	
Yes	11 (25)
No	33 (75)
Q14—Have you been diagnosed with melanoma or another form of skin cancer?	
Yes	1 (2)
No	43 (98)
Q15—Would you be interested in receiving information on melanoma and completing a follow-up survey in a few months?	
Yes	14 (32)
No	30 (68)

is an important preventive health issue. Lack of time was the most frequently cited obstacle to counseling; 59 percent agreed that given the limited time during a visit, other topics seem more important.

Education regarding tanning salon dangers is still insufficient. This questionnaire study was designed to

investigate the perception of tanning bed use among college students. Specifically, the authors sought to understand if users were educated or willing to be educated on the safety of tanning beds, frequency of tanning bed use, history of a family member using a tanning bed, and if the patient had a history of any skin cancer.

MATERIALS AND METHODS

The design chosen for this study was a nonexperimental convenience sampling of young adults at the Rochester Community College in Rochester, Minnesota. This study, the informed consent, and the questionnaire were approved by the Institutional review board at Mayo Clinic prior to its initiation.

The college policy stated that a table could be set up in the common area, but students could not be approached by the study staff. If a student approached the table, they then could be asked if they were willing to participate in the study. The table was set up and manned for one four-hour time slot per week on random days of the week and random times for six consecutive weeks to try and reach a wider population of students.

Respondents/students were provided with a paper copy as well as a verbal explanation of the study's purpose and how their information would be used prior to signing the informed consent. Each respondent was then asked to fill out the questionnaire after the consent was signed. Once completed, the respondents were offered further education on melanoma through a malignant melanoma pamphlet by the American Academy of Dermatology and also a bookmark that provided information on the ABCDEs of melanoma.

A total of 44 respondents were included in the study with three being excluded as the ages fell out of the desired range. The ages of those included fell between 18 and 51 years of age. The 15-question survey along with the answer options are denoted in Table 1. Responses to the survey were summarized with frequency counts and percentages. Associations between responses of interest were evaluated using Wilcoxon rank sum, chi-square, and Fisher exact tests. Statistical analyses were performed using the SAS software package (SAS Institute, Cary, North Carolina). All tests were two-sided and p -values <0.05 were considered statistically significant.

TABLE 2. Summary of associations with Q7 [During the past 12 months, how often did you use an indoor tanning device such as a sun lamp, sunbed, or tanning booth? (Do not count getting a spray on tan.)] for 44 participants.*

	DURING THE PAST 12 MONTHS, HOW OFTEN DID YOU USE AN INDOOR TANNING DEVICE SUCH AS A SUN LAMP, SUNBED, OR TANNING BOOTH? (DO NOT COUNT GETTING A SPRAY ON TAN)		
	Never N=35	Any N=9	
FEATURE	N (%)		P-VALUE
Q2—Age (in years)			
18–25	24 (69)	6 (67)	0.90
26–32	5 (14)	1 (11)	
33–39	2 (6)	1 (11)	
40+	4 (11)	1 (11)	
Q3—Gender			
Male	15 (43)	2 (22)	0.45
Female	20 (57)	7 (78)	
Q4—Do you believe that tanning beds are harmful?			
Never	2 (6)	0	0.60
Rarely	1 (3)	1 (11)	
Sometimes	6 (17)	1 (11)	
Most of the time	7 (20)	1 (11)	
Always	19 (54)	6 (67)	
Q5—Do you think that tanning beds cause melanoma?			
Never	1 (3)	0 (0)	0.99
Rarely	3 (9)	1 (11)	
Sometimes	14 (40)	3 (33)	
Most of the time	9 (26)	4 (44)	
Always	8 (23)	1 (11)	
Q6—Do you believe that tanning beds help to prevent sunburn?			
Never	20 (57)	1 (11)	0.007
Rarely	7 (20)	2 (22)	
Sometimes	7 (20)	5 (56)	
Most of the time	1 (3)	1 (11)	
Q9—Have you ever received education on melanoma?			
Yes	17 (49)	5 (56)	1.0
No	18 (51)	4 (44)	

*An association with Q14 (Have you been diagnosed with melanoma or another form of skin cancer?) was not evaluated since there was only one participant who was diagnosed with melanoma.

TABLE 2 continued. Summary of associations with Q7 [During the past 12 months, how often did you use an indoor tanning device such as a sun lamp, sunbed, or tanning booth? (Do not count getting a spray on tan.)] for 44 participants.*

	DURING THE PAST 12 MONTHS, HOW OFTEN DID YOU USE AN INDOOR TANNING DEVICE SUCH AS A SUN LAMP, SUNBED, OR TANNING BOOTH? (DO NOT COUNT GETTING A SPRAY ON TAN)		
	Never N=35	Any N=9	
FEATURE	N (%)		P-VALUE
Q10—Have you ever received education/information on the risks of sunburn and skin cancer related to using tanning devices? Yes No	22 (63) 13 (37)	6 (67) 3 (33)	1.0
Q11—Have you ever had a skin biopsy or a mole removed in the past? Yes No	5 (14) 30 (86)	3 (33) 6 (67)	0.33
Q12 (N=43)—Do you have a family member (mother, father, brother, sister, son, or daughter) that has been diagnosed with melanoma in the past? Yes No	5 (15) 29 (85)	3 (33) 6 (67)	0.33
Q13—Have you ever seen a dermatologist for a skin exam? Yes No	10 (29) 25 (71)	1 (11) 8 (89)	0.41
Q15—Would you be interested in receiving information on melanoma and completing a follow up survey in a few months? Yes No	13 (37) 22 (63)	1 (11) 8 (89)	0.23

*An association with Q14 (Have you been diagnosed with melanoma or another form of skin cancer?) was not evaluated since there was only one participant who was diagnosed with melanoma.

tanning booth? (Do not count getting a spray on tan)] regarding frequency of indoor tanning use are summarized in Table 2. Since there were so few participants who used tanning beds, responses were collapsed to never versus any for analysis. An association with Q14 (Have you been diagnosed with melanoma or another form of skin cancer?) was not evaluated since there was only one participant who was diagnosed with melanoma. There was a statistically significant association between the responses to Q6 (Do you believe that tanning beds help to prevent sunburn?) and Q7 [(During the past 12 months, how often did you use an indoor tanning device such as a sun lamp, sunbed, or tanning booth? (Do not count getting a spray on tan.)) ($p=0.007$). For example, 20 (57%) of the 35 participants who had never used a tanning bed thought that they never prevent sunburn, while only 1 (11%) of the 9 participants who had used a tanning bed in the past thought that they never prevent sunburn. None of the other associations evaluated were statistically significant.

DISCUSSION

The authors' study indicates that 20 percent of participants engaged in tanning bed use. In a similar patient population, a recent report on eleventh graders in Minnesota indicates that 34 percent use tanning beds regularly.¹⁰ In the authors' study, 50 percent of participants were not educated on the risks of melanoma, and 68 percent were not interested in receiving information on melanoma and completing a follow-up survey. More specifically, 63 percent versus 89 percent of participants with no tanning bed versus some tanning bed use did not want information regarding melanoma, respectively. Thirty-three percent of tanning bed users had a family member with melanoma versus 15 percent of non-tanning bed users had a family member with melanoma. Geller et al¹¹

showed that frequent sunburns and tanning bed use in children did not vary significantly between offspring with a family history of skin cancer and those without a skin cancer diagnosis in the family. On the other hand, frequency of tanning bed use was negatively correlated

RESULTS

The demographics of responders to the survey are summarized in Table 1. Associations with the responses to Q7 [(During the past 12 months, how often did you use an indoor tanning device such as a sun lamp, sunbed, or

with the age and existence of family experience with skin cancer among healthcare workers.³

The authors' study showed that more tanning bed users believe tanning helps prevent burning than non-tanning bed users. Fifty-two percent of participants in this study believed that some degree of tanning bed use helps prevent sunburns. More specifically, 20 (57%) of the 35 participants who had never used a tanning bed thought that they never prevent sunburn, while only 1 (11%) of the 9 participants who had used a tanning bed in the past thought that they never prevent sunburn, which was statistically significant.

More active steps can be taken to reduce indoor tanning. Since peer use of indoor tanning has a strong influence on tanning, education aimed at peer education groups may be useful, as it is not currently done. Another way to promote safety would be incorporating sun safety awareness into everyday events, such as using the daily UV Index in weather or other news.¹² YouTube videos can be designed and promoted regarding the safety of tanning beds as well. Statistical evidence and a narrative/case study both decreased intention to tan; statistical messages are more effective than narrative messages in decreasing intention to tan, although both types of education overall decrease intention to tan.¹³ Self-assessment surveys can be given to patient populations that engage in tanning bed use, as there is decreased intention to tan and decreased tanning bed use in those who fill out self-assessment surveys.¹³

Limitations of the authors' report include self-reported data, although self-reported exposure to artificial tanning devices has shown to be reliable and reproducible.¹⁴ McMullen et al¹⁵ reported that questions pertaining to hours spent in the sun and sun bed usage showed high reliability (kappa >0.7). This questionnaire can help assess misconceptions about tanning, which can be targeted for improvement in public health.

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